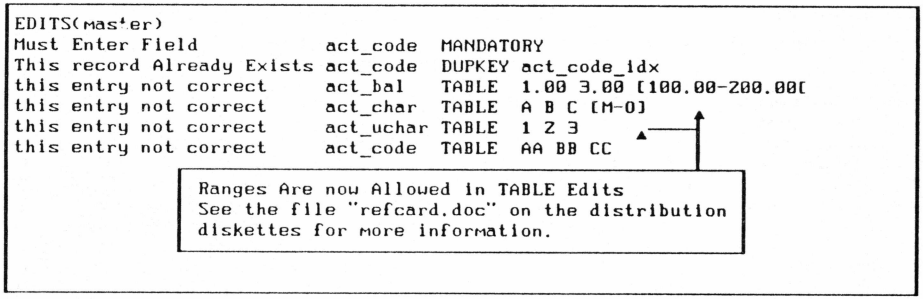
d-tree Version 3.1 Release E2 Update Information

The following notes refer to new features that have been added to d-tree since release D2. These changes may not yet be noted in the documentation.

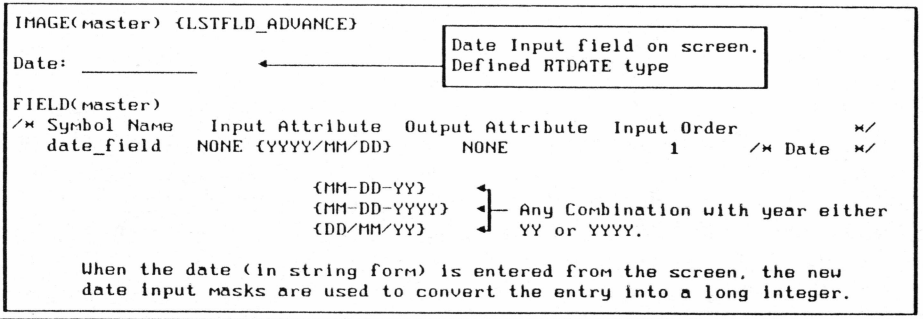
1) Field Range Checking

The ability to place a RANGE check on a field has been added to the EDIT ability. This was done by enhancing the TABLE edit type. Along with single values, ranges can be defined in a [a-z] format as elements of the table. Ranges are supported for all field types except strings and dates. Refer to the file named "refcard.doc" on distribution disk for more information on range syntax.



2) Integer Date Field Support

d-tree now properly handles dates that are stored as long integers (i.e.: RTDATE type). The logic to handle the conversion from integer to string and back again is in place. This allows dates to be presented on an IMAGE in a string format such as MM/DD/YY and then be stored as a long integer. All reasonable date formats are supported , including a four digit year. The format of the string is required in order to properly convert the date into a long integer. (i.e.: DD/MM/YYYY as opposed to YY-MM-DD). This format is defined using input attribute field masks within the FIELD ability section. The new mask characters of M,D,and Y have been added to provide this support.



3) EDITS: MANDATORY_IF and "OR"ing capability

Three New features have been added to the EDITS ability:

A new edit type of **MANDATORY_IF** provides a way to indicate that a field is mandatory if another field is not blank (ie: if one field is entered the other is mandatory). To define which field will be checked for an entry, you enclose its symbolic name in brackets {} following the MANDATORY_IF keyword. See illustration below.

The means to "OR" edits has been added to the EDITS ability. Placing the keyword "**OR_WITH_NEXT**" as the error message for an edit, specifies that this edit is to be "OR'd" with the next edit.

The new keyword "**LOOKUP_ONLY**" has been added to the VALIDATE edit. Placing this keword after the map and scan identifiers provides the same lookup capability as a regular VALIDATE edit, but relaxes the "equal hit" edit. This allows a key that supports duplicates, to be used for "lookup" purposes.

```
EDITS(master)
/* Error Message            symbol name  edit type   edit information */
Must Enter Complete Code    cou_cod      MAND_FILL
Must Enter County Code      cou_cod      MANDATORY_IF {field_symbol}
This county already exits   cou_cod      DUPKEY C_Num
OR_WITH_NEXT                cou_cod      VALIDATE ex1idx  cmap cscann prefix
Code must exist in File     cou_cod      VALIDATE ex2idx  cmap cscann prefix
None                        cou_cod      VALIDATE ex3idx map scan LOOKUP_ONLY

   New Features in EDITS:

   a) a new edit type of MANDATORY_IF has been added. This field will be
      MANDATORY if there is a value in the field supplied in brackets {}.

   b) There is now an "OR" capability in edits. Place the keyword
      "OR_WITH_NEXT" as the error message for an edit that is to be or'd
      with the next edit. "OR" edits may be stacked, with the first edit
      without the "OR_WITH_NEXT" keyword as the final or condition. The
      error message for this edit is displayed if all "OR"'s fail.

   c) The "LOOKUP_ONLY" keyword will relax the "equal hit" edit, while
      allowing a "lookup" capability. The error message is necessary,
      although will not be displayed.
```

5) DEFAULTS: List type default ; field default values

Two new features have been added to the DEFAULTS ability:

a) A new defaults type has been added known as a default list type. The best way to describe this is through an example. We want to present the user with a field that has a limited amount of valid entries. In this case we'll use a field where the user is to specify a baud rate. Valid values are limited to 300, 1200, 2400, 9600, and 38400. We could simply place a TABLE edit on this field, but this would necessitate the user enter the value. Rather, we would prefer to default the field with a valid value, and allow the user to simply hit the space bar

to change the value to another valid entry. In this case we will default the field to 300 baud, and each time the user hits the space bar the value will change from 300 to 1200; from 1200 to 2400; from 2400 to 9600...from 34400 to 300...etc. See the illustration below. Note: an input attribute of NOCHANGE must be placed on the field in order for the "space bar change logic" to take effect. This is done in the associated FIELD section.

b) Before this release, the value used to default a field could only be a literal keyed in the d-tree script. We have now added new support where the value used to default a field can be the contents of another field. This is done by placing the symbol name of the other field (within brackets with no spaces) as the default value. See illustration below:

```
DEFAULTS(master)
 /* Symbol Name    Type of defaults       Defaults value */
    office             DFALT_KEY      Reno Office
    office_date        INIT             SYSDATE
    office_time        DFALT_KEY        SYSTIME
    baud_rate          DFALT_LIST       300 1200 2400 9600 38400
    office_name        DFALT_KEY        {office} /* put field symbol in { } */

    Two New DEFAULT features:

    a) Enter a list of valid values. The field will be initialized with the
       first value. When users enter this field, they can hit the space
       bar. The value of the field will change to the next entry in the list
       each time the space bar is hit.

    b) The default value can now be another field value. Simply place the
       desired field's symbol name within brackets {} without any spaces.
       When the default is executed, the value of current value of this field
       will be "defaulted" into your destination.
```

4) Menu Enhancements

Three new features have been added to the menu support.

The first two features pertain to cursor movement (option selection) for lotus style menus.

a) The user now can hit the space bar to move to the next option.
b) Support to allow the user to enter the first character of a desired option has been added by means of the new input attribute GOTO in the FIELD ability.

The third new feature may be illustrated as follows: While on a certain menu option, it may be helpful to display "help" information pertaining to the option. This "help" should automatically change when the user moves from option to option. This effect is provided by the new AUTO_HELP input attribute in the FIELD ability working in conjunction with the HELP ability. Place the AUTO_HELP attribute on the desired field. Add the "help text" via the help ability as shown below. When the cursor enters this field, the help text will automatically be displayed, without the need for the user to hit the help key.

```
                    Small Project Accounting
  Thu Nov 03    System Master Menu      02:52:39

                  Posting Menu
                  Report Menu
                  Other

                Do Your Daily Posting  <-------- AUTO_HELP text
```

a) On a Lotus style menu you may now hit the space bar to go to next option
   Example: Hit space bar will move BAR to Report Menu.

b) Using the new GOTO input attribute allows jumping to options by entering
   the first letter of the option. Example: Hitting "O" will take us to
   "Other" option.

c) Using the new AUTO_HELP input attribute allows option description text
   to be displayed while on an option. As you move from option to option
   this text will change.

```
FIELD(menu)
 /* Symbol Name    Input Attribute          Output Attribute   Input Order */
    menu1a      GOTO AUTO_HELP NOCHANGE        INPUTRI             1
    menu1b      GOTO AUTO_HELP NOCHANGE        INPUTRI             2
    menu1c      GOTO AUTO_HELP NOCHANGE        INPUTRI             3
```

b) Allow user to hit first character of another menu option to GOTO that option.
c) Display Help text automatically when entering this help.

```
HELP(menu)
/* Help Text                 Field Symbol  */
   Do Your Daily Posting     menu1a
   Go To Report Menu         menu1b
   Describe Other Here       menu1c
```

Help text defined here.

6) Prompt Ability

The scan name was mandatory in the PROMPT ability syntax in the prior release. The DT_PRMPT function can be very useful in creating key targets, without the use of a scan. Therefore we have allowed the keyword of NONE to be used as a scan name in the PROMPT ability syntax.

```
PROMPT(master)
 USES_IMAGE(prompt)
/* key symbol name  scann name   fields for target      prefix */
    C_Num            NONE         cou_cod
    C_Nam            master       cou_name
    NONE             master       option

                   No scann defined.
```

7) IFILS: DODA can be defined in script

d-tree now supports the ability to define the fields in the data object definition array (DODA) through a d-tree script, as opposed to being hard coded within the program. This is done by use of the new "PGM_FIELDS" keyword within the IFILS ability section. Simply enter your program fields (DODA elements) following the syntax illustrated below. At this point in time, d-tree does not support part of the DODA being hard coded, while other parts are dynamic (defined in a d-tree script). The ability to define fields in a dynamic manner is a powerful concept. The field types follow r-tree's naming convention and can be found in the file "rtdoda.h".

```
IFILS

PGM_FIELDS
/* doda symbol name        field type          field length  */
    name                    STRING                   11
    address                 STRING                   30
    balance                 RTDFLOAT                 8
    quantity                RTINT2                   2

   d-tree now supports the ability to define a DODA from a d-tree script. This
   is done with a new keyword that has been added to the IFILS ability. By
   entering PGM_FIELDS within the IFILS ability section the DODA or
   in otherwords, program fields can now be defined.
```

IFILS Change: The "DICTIONARY" capability discussed in the IFILS section in the d-tree manual has been changed. There is no longer a "DICTIONARY" keyword within the IFILS ability. Due to the power and flexibility that can be obtained by accessing definitions from a data dictionary, this capability has been moved to its own ability type. Access to the data dictionary at runtime can now be obtained by means of the new DATA_DICTIONARY ability. See below.

8) New Data Dictionary Ability

A new ability to allow file definitions to be defined from within a d-tree script has been added. By following the syntax shown below, in conjuction with the new function call DT_DDICT, file definitions can be accessed at runtime.

```
DATA_DICTIONARY(myfiles)

DICTIONARY diction.dta
FILE_NAME  filenam.dta
VERSION    1.0


  File definitions used in a program can now be defined from a d-tree script.
  A new d-tree function called DT_DDICT(ref) has been added to the toolbox.
  By calling this function from within your program, file and index
  definitons (this includes IFIL, IIDX, ISEG, and DODA definitions) are
  swapped into memory at runtime. Example: Consider the definition above in
  your d-tree script and the following line of code in your c program.

  if (uerr_cod=DT_DDICT(DT_INAME("myfiles")))
    printf("Could no get file definition from data dictionary");

  DT_DDICT will open the data dictionary with the file name of "diction.dta".
  It will then try to read in the definitions for file "filenam.dat" version
  1.0. (data dictionary stores multiple file definitions with version control)
```

9) Parsing Error Help.

When an error occurs while parsing a d-tree script, the ability name, as well as the ability number will now be displayed. If you started at the top of the script and counted all ability definition sections (count all ability types, not just the type that had the error), until you hit the ability number shown, you would be on the section where the error occurred.

```
C:\DT >posting  <------------------- Run your Program.
token='tamntx'  <------------------- Last Token hit in script.
   |<------------------------------- Ability that was being parsed.
   v
<FIELD> (the #7 ability in the script) has an Error
Error Occurred During Parse Error=1001hex 4106

C:\DT >                          ^   ^-- c-tree error or
                                 |       d-tree error
                                 |
```

10) GROUPS - New High Level Group In/Out.

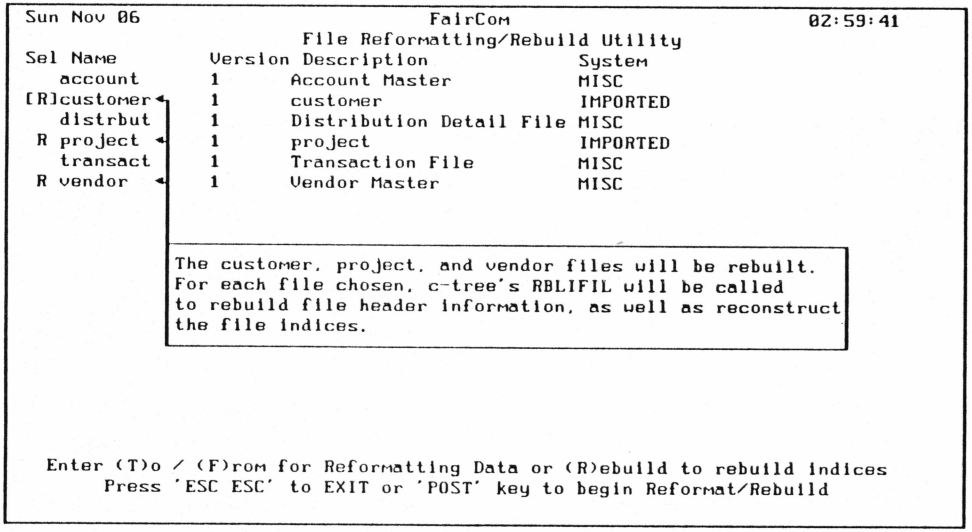
The function DT_GPHIN (group high level in) and DT_GPHOT (group high level out) have been added to d-tree. DT_GROUT provides a means to store a script definition into a "group" file. DT_GPHIN is used to access the definition and swap it back into memory. See DT_GROUT.C and DT_GROUP.C.

11) DT_FUNCP - Set Function pointers

As we begin work to bring the code size down in d-tree, we have started to use a number of function pointers. These pointers are initialized for you by d-tree when ability definitions are being parsed in, or they are hard coded. If ability definitions are being swapped in though the use of GROUPS, you are responsible for initializing these pointers. The function DT_FUNCP has been provided to perform this initialization. This function must be called at the top of you program just after DT_SETTY to set the function pointers. THIS ONLY APPLIES IF YOU ARE USING GROUPS. Note: The current version of this function initializes all pointers. You may want to create your own version of this function, only specifying the functions pointers your program will be utilizing, in order to decrease code size. The function can be found in the source file DT_FUNCT.C.

12) Easy way to rebuild indices from the catalog

We have added an easy way to provoke a file rebuild. The Reformat option on the catalog's data dictionary menu has been enhanced. Now called the "Reformat/Rebuild" option, this selection allows files to be chosen for rebuild. By rebuild we mean: c-tree's RBLIFIL will be called for each file chosen. Simply place an "R" next to the file to be rebuilt as shown below:



13) Running Clock (DOS INSTANT ONLY)

We have enhanced the time display to now show a running, 12 hour clock. This is only supported in the DOS environment when using INSTANT screens. We hope this is not a limitation in future releases.

14) DT_INIMG - Initialize fields for a certain IMAGE

The function DT_INIMG function has been added to allow initialization of all fields that pertain to a specific IMAGE. Example:

DT_INIMG(1);

will look for all fields on IMAGE number 1 and initialize them. This function may be found in the source module DT_IMAGE.C.

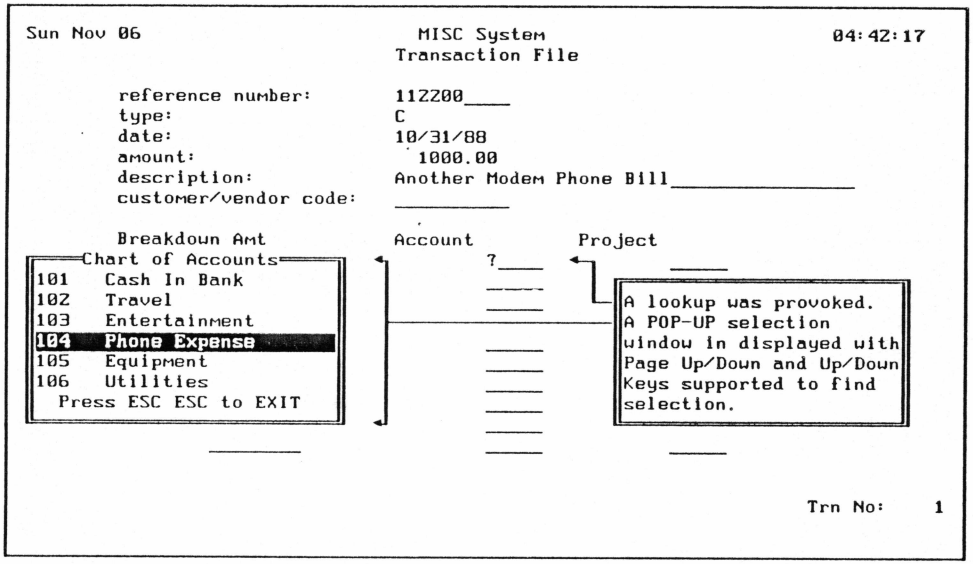
15) DT_TXFLD - return the value a field in text form.

The function DT_TXFLD has been added for the following purpose: Given a text pointer, followed by a FIELD pointer (type DTTFIELD), this function will place the value of the field into the buffer pointed to by the text pointer. This value will be in the same form as if it were sent to the screen. (masks included, numeric to ascii, etc.).

16) SCAN Ability - Bar Select and Add Mode.

Two very nice features have been added to the SCAN ability. The most current scan module can be found in the "patches" directory on disk #5. Because of the usefulness of the following features, we pushed to get them in this release. Although the features are complete, we have not thoroughly tested them in all environments. The previous version of the DT_SCANN.C module can be found on disk #3 if found necessary. We suggest starting with the latest (disk #5 version of DT_SCANN.C) which contains the following features:

First the ability to define an alternate way to select a record. As opposed to the user being displayed a list of numbered records and having to enter the number of the desired record, d-tree now supports defining a "SELECT BAR". This means that records can be selected by positioning a reverse image bar on the desired record and pressing 'return'. This approach is supported as follows: a) the image reference provided for the IMAGE_INP definition should be the same as the IMAGE_ROL definition. b) The new keyword "SELECT_BAR" must be added to the SCAN definition section. See illustration.



The script to provide this selection looks like this:

```
                                    posting.dts
IMAGE(acthead)  {POP_UP} {BASE_ROW=12}
+Transaction File

                                          *Note the highlighted keywords



   Press ESC ESC to EXIT
                          +

IMAGE(actroll) {CLR_BLOCK} {BASE_ROW=12} {LSTFLD_ADVANCE} {FRSFLD_BACKUP}

 _____ ____________________

FIELD(actroll)
/* Symbol Name    Input Attribute   Output Attribute   Input Order   I/O Special *
    acode             NOCHANGE           NONE              1 /* account code */
    adesc             PROTECT            NONE              2 /* desc */

SCAN(actscan) {IMAGE_OUT=acthead} {IMAGE_ROL=actroll} {IMAGE_INP=actroll}
              {SELECT_BAR} {ROLL_LINES=6}
```

The scan ability still supports selecting records by entering a reference number when the image references for IMAGE_ROL and IMAGE_INP are different. We have enhanced this selection. You may now enter either the record's reference number, or point to the record for selection. The new point feature (as well as the character used to "point") are defined by the **#define SCAN_POINT** at the top of DT_SCANN.C. Commenting out this #define will relax the "point" character and "point" selection ability.

```
Sun Nov 06                          MISC System                          04:41:31
                                  Transaction File
Select
   1 01          111111          11  1
   2 02          222222           2  2
   3 03          3                3  3
   4 04                           4  4
   5 05          5                5  5
 ↓ 7 07          7                7  7
 › 8 08          8                8  8
   9 09          9                9  9
  10 10          10               1  10
  11 11          1                1  11
  12 12                           ___ 12
  13 13                           ___ 13
  14 14                           ___ 14
  15 15                           ___ 15
  16 16                           ___ 16
  17 17                           ___ 17
  18 18                           ___ 18
                                  Enter Desired Option:[__]
                                     Press ESC ESC to EXIT
                                       FairCom (c) 1988
```

Point Character as defined by SCAN_POINT in DT_SCANN.C. Can hit 'RETURN' to select record #8.

The second feature allows the user to enter into an "ADD MODE" for the file that is being scanned. Example: Say we are entering a customer number when keying invoices. We enter a "?" in the customer id field to do a lookup into the customer file. We discover that this is a new customer who should be added to the customer master file. While in the scan screen, d-tree now supports the ability to enter an "ADD MODE" into the customer file. The new scan keyword "IMAGE_ADD" has been added for this purpose. Providing the image to be used for the "ADD", will allow the user to hit "F1" from the scan screen. This will provoke the add process, which, once complete, will return to the scan. See illustration below:

```
SCAN(actscan) {IMAGE_OUT=acthead} {IMAGE_ROL=actroll} {IMAGE_INP=actroll}
              {SELECT_BAR} {ROLL_LINES=6} {IMAGE_ADD=actadd}
```

Image to use as Add Screen

New Keyword

DT_SCANN.C

```
/*************************************************************************/
COUNT DT_SCWAT(message,kbd,from) /* what to do next after input */
DTTMESAG *message;
COUNT      kbd;          /* what happened */
COUNT      from;          /* where from */
{
COUNT DT_SCGET();

switch (kbd)
 {
  case DTKBF1:
              DT_ADDMD(message->datno,message->sptr->imgadd);
              return(0);
```

F1 defined here to be used to go into Add Mode. Change code here if desired.

BUGS FOUND

The following list contains areas where bugs were found. If you were experiencing problems in any of these areas, we hope we've solved the problem.

- Default "AUTO DUP" feature.
- Numeric input of fields(delete key problem).
- System hanging when input masks were defined for numeric fields.
- TABLE edit problem.
- IMAGE parsing problems (TABS in IMAGE now ok).
- r-tree front end prompt parsing error.
- Window overlapping problems.
- Ending comment left out of code.
- Unix/Xenix termio problem.
- Help ability bug.
- Page Up/Down problem in subfiles.
- Hard coded hooks problem.
- Subfile map problem.
- Hard coded input fields.

CATALOG

The Catalog program had a number of bugs that were fixed, primarily where "core dumps" where occuring in the Xenix/Unix world. Below are some of the more obvious problems that have been fixed:

- **RECORD LENGTHS:** When a field length was entered into the data dictionary, the record length was being calculated based on this field length without taking the field type into consideration. I.E: user keys an integer field and says it is 5 long. The length of 5 was being used not only to control the input length that was used when creating a d-tree script , but also as the length to determine record length. The result was invalid record lengths.

  Now the catalog acts as follows:

  For all field types except char arrays(strings): the length keyed in the data dictionary will be the length used to draw input lines (____) when creating scripts. The length used to calculate record lengths will be based on the field type, not on the field length. For char arrays(string):

then length will be the length used to calculate record length, and the input lines (___) placed in a d-tree script will be one less than the field length. The last byte of a char array is used for the NULL byte.

- User Defined Segment Modes.
- To/From Reformat File Problems.
- Zero Length Parameter File being Created from the catalog.
- Text In/Out Problem.
- Creating default d-tree script: decimal position now added to script.

We would like to thank all the users who mave been so helpful in both pointing out problem areas, as well as coming up with good new ideas. We are not going to sit here and take all the credit for the new features that have been implemented in this release. (we will take blame for the bugs in the last release). It's your positive feedback that makes the coding worthwhile. We wish we could have implemented all the useful suggestions, but as you well know, it had to be cut off sometime. Thank you again, and please continue to communicate bugs, suggestions and/or enhancements.

For your information, the areas at the top of the development list are:

1) Smaller Code Size.

2) Memo Fields (variable length word processing like fields).

3) Group Examples.

We list these for information only. We hesitate to give time frames. We encourage users who are in need of a feature to get advice from us as to how to approach the problem, and not to wait on us. We can only promise consistent hard work in our development lab.